

Claims

1. A system for measuring a radio frequency signal in a wireless station (1), whereby the system comprises at least testing equipment (6, 7, 12), the testing equipment comprises at least a testing apparatus (7), a measuring head (6) and means (12) for transmitting electrical signals between said testing apparatus (7) and measuring head (6), and the wireless station (1) comprises at least one radio part (8), a wiring board (2), an antenna (5) and a switching means (3, 22), which has at least a first position, in which the radio frequency signal is arranged to be directed between the radio part (8) of the wireless station (1) and the antenna (5), and a second position, in which the radio frequency signal is arranged to be directed between the radio part of the wireless station and the testing apparatus (7) via said switching means (3, 22) and the measuring head (6), **characterized** in that a switching aperture (4) is provided in the wiring board (2) essentially at least partly at the location of said switching means (3, 22), through which aperture said switching means (3, 22) is arranged to be switched to the second position.
2. A system according to Claim 1, **characterized** in that a property of the radio frequency signal, such as power, frequency, sensitivity, bit error rate or modulation spectrum, which has an effect on the performance, is arranged to be measured.
3. A system according to Claim 1 or 2, in which the wireless station (1) also comprises at least a shell (16), **characterized** in that a testing aperture (17) is provided in said shell (16) essentially at least partly at the location of the switching aperture (4), through which testing aperture (17) and switching aperture (4) said switching means (3, 22) is arranged to be switched to the second position.
4. A system according to any one of the claims 1, 2 or 3, **characterized** in that said switching means (3, 22) is arranged to be switched to the second position with the measuring head (6).

5. A system according to Claim 4, **characterized** in that the measuring head (6) also comprises grounding means (10) for providing a grounding connection for the testing apparatus (7) while the testing probe (6) is connected to said switching means (3, 22).
- 5 6. A system according to any one of the claims 1 to 4, whereby the wireless station (1) comprises at least one grounding connection (13) on the wiring board (2), **characterized** in that the system also comprises at least a testing card (9) and means (19) for coupling the testing card to the wireless station, which testing card (9) is coupled to the testing apparatus (7) with said means (12) for transmitting electrical signals, which testing card (9) is arranged to be placed in said means (19) for coupling the testing card to the wireless station, that the measuring head (6) is installed in a testing aperture (4) formed in the wiring board (2) of the wireless station (1), that said testing card (9) comprises at least mode switching means (15), one grounding connection (10) and a measuring connection (11), and the mode switching means (15) are arranged to push said switching means (3, 22) to the second position by means of the measuring head (6), whereupon the grounding means (10) are coupled to an electrically conductive connection in the grounding connection (13), the measuring head (6) is coupled to an electrically conductive connection in said switching means (3, 22) and the measuring head (6) is coupled to an electrically conductive connection in the measuring connection (11), whereupon the radio frequency signal is directed between the radio part (8) of the wireless station (1) and the testing apparatus (7) via said switching means (3, 22), measuring head (6) and testing card (9).
- 30 7. A system according to Claim 6, in which the wireless station (1) comprises at least a measuring head returning device (14), **characterized** in that the measuring head (6) is installed in a switching aperture (4) formed in the wiring board (2) so that when the testing card (9) is removed from the SIM card slot (19), the measuring head is released by means of the measuring head returning device (14), such as a spring, whereupon said switching means (3, 22) returns to the first position.
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8. A system according to any one of the claims 1 to 4, whereby the wireless station (1) comprises at least one grounding connection (13) on the wiring board (2), **characterized** in that the system also comprises at least a testing card (9) and means (19) for coupling the testing card to the wireless station, the testing card (9) is coupled to the testing apparatus (7) with said means (12) for transmitting electrical signals, the testing card (9) is arranged to be placed in said means (19) for coupling the testing card to the wireless station for carrying out the measurement, that said testing card (9) comprises at least one measuring head (6) and a grounding connection (10), and the measuring head (6) is arranged to switch said switching means (3, 22) to the second position, whereupon the grounding means (10) are coupled to an electrically conductive connection in the grounding connection (13) and the measuring head (6) is connected to an electrically conductive connection in said switching means (3, 22), whereupon the radio frequency signal is directed between the radio part (8) of the wireless station (1) and the testing apparatus (7) via said switching means (3, 22), measuring head (6) and the testing card (9).
9. A system according to any one of the claims 6, 7 or 8, whereby the wireless station (1) comprises at least one SIM card (18), **characterized** in that the above mentioned means (19) for coupling the testing card to the wireless station comprise at least one SIM card slot (19), into which the SIM card (18) is arranged to be placed, and the above mentioned testing card (9) is arranged to be placed instead of the SIM card (18) in the SIM card slot (19).
10. A system according to Claim 9, **characterized** in that the testing card (9) comprises means for implementing at least one functional property of the SIM card (18), such as a microprocessor and memory.
11. A method for measuring a radio frequency signal in a wireless station (1), whereby radio frequency power is measured by means of testing equipment (6, 7, 12), the testing equipment comprises at least a testing apparatus (7), a measuring head (6) and means (12) for transmitting electrical signals between said testing apparatus (7)

- and measuring head (6), and the wireless station (1) comprises at least one radio part (8), a wiring board (2), an antenna (5) and switching means (3, 22), which has at least an first position, in which the radio frequency signal is directed between the radio part (8) of the wireless station (1) and the antenna (5), and a second position, in which the radio frequency signal is directed between the radio part (8) of the wireless station (1) and the testing apparatus (7) via said switching means (3, 22) and the measuring head (6), **characterized** in that a switching aperture (4) is formed in the wiring board (2) essentially at least partly at the location of said switching means (3, 22), through which aperture said switching means (3, 22) is switched to the second position.
12. A method according to Claim 11, **characterized** in that a property of the radio frequency signal, such as power, frequency, sensitivity, bit error rate or modulation spectrum, which has an effect on the performance, is measured.
13. A method according to Claim 11 or 12, whereby the wireless station (1) also comprises at least a shell (16), **characterized** in that a testing aperture (17) is formed in said shell (16) essentially at least partly at the location of the switching aperture (4), through which testing aperture (17) and switching aperture (4) said switching means (3, 22) is switched to the second position.
14. A method according to any one of the claims 11, 12 or 13, **characterized** in that for carrying out the measurement, said switching means is switched to the second position with the measuring head (6).
15. A method according to any one of the claims 11 to 14, whereby the wireless station (1) comprises at least one grounding connection (13) on the wiring board (2), **characterized** in that the testing equipment (6, 7, 12) mentioned above also comprises at least a testing card (9) and means (19) for coupling the testing card to the wireless station, the testing card (9) is coupled to the testing apparatus (7) with said means (12) for transmitting electrical signals, and

the testing card (9) is placed in said means (19) for coupling the testing card to the wireless station for carrying out the measurement, that said testing card (9) comprises at least mode switching means (15), one grounding connection (10) and a measuring connection (11), and when the testing card (9) is installed, the mode switching means (15) push said switching means (3, 22) to the second position by means of the measuring head (6) in the switching aperture (4) in the wiring board (2) of the wireless station (1), the grounding means (10) are coupled to an electrically conductive connection in the grounding connection (13), the measuring head (6) is coupled to an electrically conductive connection in said switching means (3, 22) and the measuring head (6) is coupled to an electrically conductive connection in the measuring connection (11), whereupon the radio frequency signal is directed between the radio part (8) of the wireless station (1) and the testing apparatus (7) via the measuring head (6) and testing card (9).

16. A method according to Claim 15, in which the wireless station (1) comprises at least a measuring head returning device (14), **characterized** in that the measuring head (6) is installed in a switching aperture (4) formed in the wiring board (2) so that when the testing card (9) is removed from the SIM card slot (19), the measuring head is released by means of the measuring head returning device (14), such as a spring, whereupon said switching means (3, 22) returns to the first position.

17. A method according to any one of the claims 11 to 14, whereby the wireless station (1) comprises at least a SIM card (18), a SIM card slot (19) in which the SIM card (18) is placed, and at least one grounding connection (13) on the wiring board (2), **characterized** in that the testing equipment (6, 7, 12) mentioned above also comprises at least a testing card (9) and means (19) for coupling the testing card to the wireless station, which testing card (9) is coupled to the testing apparatus (7) with said means (12) for transmitting electrical signals, which testing card (9) is placed in said means (19) for coupling the testing card to the wireless station for carrying out the measurement, that said testing card (9) comprises at least

one measuring head (6) and a grounding connection (10), and when the testing card (9) is installed, the measuring head (6) switches said switching means (3, 22) to the second position, the grounding means (10) are coupled to an electrically conductive connection in the grounding connection (13), and the measuring head (6) is coupled to an electrically conductive connection in said switching means (3, 22), whereupon the radio frequency signal is directed between the radio part (8) of the wireless station (1) and the testing apparatus (7) via the measuring head (6) and testing card (9).

18. A method according to any one of the claims 15, 16 or 17, whereby the wireless station (1) comprises at least one SIM card (18), **characterized** in that the above mentioned means (19) for coupling the testing card to the wireless station comprise at least one SIM card slot (19), in which the SIM card (18) is placed, whereupon the above mentioned testing card (9) is placed instead of the SIM card (18) in the SIM card slot (19) for carrying out the measurements.
19. A method according to Claim 18, **characterized** in that the testing card (9) comprises means for implementing at least one functional property of the SIM card (18), such as a microprocessor and memory.